CLAIMS

1. A photo-catalyst containing a titanium (IV) compound comprising, $Ti(IV)O_aN_bF_c$ or a compound represented by $MeTi(IV)O_aN_bF_c$ prepared by doping at least one metal Me selected from the group consisting of alkali or alkaline earth metals on $Ti(IV)O_aN_bF_c$, wherein, b is 0.1 to 1, c is 0.1 to 1 and a is a value to maintain Ti(IV) and is decided in relation to b and c.

2. The photo-catalyst of claim 1 further comprising at least one promoter selected from the group consisting of Pt, Ni and Pd.

3. The photo-catalyst of claim 1, wherein $Ti(IV)O_aN_bF_c$ possesses anatase structure and $MeTi(IV)O_aN_bF_c$ possesses perovskite to anatase structure.

4. The photo-catalyst of claim 3 further comprising at least one promoter selected from the group consisting of Pt, Ni and Pd.

5. A photo-catalyst for water splitting containing a titanium (IV) compound comprising, $Ti(IV)O_aN_bF_c$ or a compound represented by $MeTi(IV)O_aN_bF_c$ prepared by doping at least one metal Me selected from the group consisting of alkali or alkaline earth metals on $Ti(IV)O_aN_bF_c$, wherein, b is 0.1 to 1, c is 0.1 to 1 and a is a value to maintain Ti(IV) and is decided in relation with b and c.

6. The photo-catalyst for water splitting of claim 5 further comprising at least one promoter selected from the group consisting of Pt, Ni, Ru and Pd.

7. The photo-catalyst for water splitting of claim 5, wherein $Ti(IV)O_aN_bF_c$ possesses anatase structure and $MeTi(IV)O_aN_bF_c$ possesses perovskite to anatase structure.

8. The photo-catalyst for water splitting of claim 7 further comprising at least one promoter selected from the group consisting of Pt, Ni and Pd.

9. A method for preparation of a photo-catalyst represented by $Ti(IV)O_aN_bF_c$, wherein b is 0.1 to 1, c is 0.1 to 1 and a is a value to maintain Ti(IV) and is decided in relation to b and c, comprising baking titanium di-ammonium fluoride halide represented by $(NH_4)_2TiF_dX_{6-d}$, wherein, d is1-6, and which contains at least F and ammonium halide by the ratio of equimolar or by the ratio of slightly excess of ammonium halide, at the maximum temperature from 200°C to 500°C whereby a starting material is formed, followed by nitrogenating said starting material by thermal synthesis in ammonia atmosphere containing from 0.02% to 10.00% of oxygen, air or water to ammonia by reduced mass to oxygen atom at the maximum temperature from 350°C to 700°C for over than 5 hours.

10. (Currently amended) A method for preparation of a photo-catalyst represented by $SrTi(IV)O_aN_bF_c$, wherein, b is 0.1 to 1, c is 0.1 to 1 and a is a value to maintain Ti(IV) and is decided in relation to b and c, comprising baking titanium di-ammonium fluoride halide represented by TiF_xX_{6-X} and/or $(NH_4)_2TiF_dX_{6-d}$, wherein x and d are1-6, and which contains at least F, and at least one compound selected from the group consisting of SrO, SrOH and SrX so as to form a starting material or $SrTiF_6$, followed by nitrogenating said starting material or $SrTiF_6$ by thermal synthesis in ammonia atmosphere containing from 0.02% to 10.00% of oxygen, air or water to ammonia by reduced mass to oxygen atom at the maximum temperature from 350°C to 700°C for over than 5 hours.